Engineering and Operations Workgroup Study Plans

Study #1b: Local Operations Model Development

November 16, 2001

Goals

- Develop appropriate local operation model
- Integrate into the overall modeling scheme
- Perform benchmark simulations

Task 1. Define desired outputs from model

- Includes:
  - Oroville Reservoir Release
  - Diversion Pool release to Thermalito Forebay
  - Diversion Pool release to low flow section of Feather River
  - Pump/Generation at Hyatt Powerhouse
  - Release from Thermalito Forebay to Thermalito Afterbay
  - Pump/Generation at Thermalito Powerhouse
  - Diversion from Thermalito Afterbay
  - Release from Thermalito Afterbay to the Feather River
  - Feather River flow below Thermalito Afterbay return

Task 2. Review existing models

- DWR's COLOSSUS model
  - Hourly timestep
  - Has power capability
  - Developed for operations purposes

- DWR's CALSIM II model
  - Monthly timestep
  - Does not include all facilities
  - Does not implement power

Task 3. Review existing data

- Types of data required include:
  - Physical system description
  - Inflows
  - Flows
  - Releases
  - Diversions
  - Oroville-Thermalito water levels
  - Power generation including pumpback

Task 4. Review modeling tools

- PROSYM-WATERWAY
  - PROSYM is power system dispatch tool, WATERWAY is flow operation modeling tool
  - Can be linked to create hydropower system simulation tool

- VISTA
  - Hydropower system simulation development tool

Task 5. Select appropriate model or modeling tool

- Based on the results of task 1 through 4 select the appropriate model/modeling tool to create the local operations model for this process

- Get approval from plenary group

Task 6. Collect field data for development, calibration, and verification

- Identify additional data required

- Install instrumentation as required

- Collect data

Task 7. Model Development, Calibration, and Verification

- Define system to be modeled and schematic to be used

- Develop physical system definition in model

- Develop time-series input data (hydrologic, operational)

- Verify completed model

Task 8 – Integrate into modeling scheme

- Use definitions from Study Plan 1, Tasks 1 and 5
- Finalize transfer utilities and process

Task 9. Perform benchmark simulations

- Get boundary conditions from central modeling database
- Use utility programs to create input based on the boundary conditions
- Perform the actual simulations
- Use utility programs to load data into central modeling database

Products

- Local operation simulation model

- Benchmark local operation simulation results